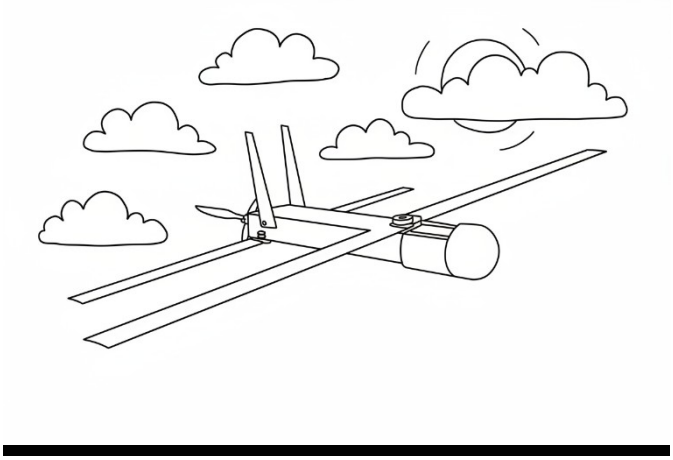
Raytheon Coyote (Block 1 / Block 2 / Block 3NK / LE SR)



IDENTITY & DESIGNATION

Official Designation: Raytheon Coyote
Manufacturer: Raytheon (RTX Corporation), Tucson, Arizona, USA
Original Developer: Advanced Ceramic Research (ACR), Tucson, AZ; acquired by BAE Systems 2009, sold to Sensintel, acquired by Raytheon 2015
Country of Origin: United States
Year Introduced: 2007 (Block 1 first flight); 2018 (Block 2); 2020+ (Block 3); 2025 (LE SR)
NATO/Allied Designation: N/A — U.S. military program designations: Howler C-UAS (Block 1B + KuRFS); LIDS / M-LIDS / FS-LIDS (integrated systems)

CLASSIFICATION

Domain: Air
Category: Counter-UAS Interceptor / Loitering Munition / ISR UAV / Launched Effect

Sub-Category: Block 1: Group 1 UAS (under 20 lbs). Block 2: Small expendable SAM. Block 3NK: Reusable non-kinetic C-UAS effector. LE SR: Multi-role launched effect
Terminal Mode: Block 1B/2: Expendable (kinetic kill). Block 3NK: Recoverable (non-kinetic HPM). LE SR: Configurable — recoverable for ISR/EW, expendable as loitering munition
Expendable: Varies by variant (see above)

PHYSICAL SPECIFICATIONS

Length (Block 1): ~36 in (91 cm)
Length (Block 1B C-UAS): ~24 in (61 cm)
Length (Block 2): ~4 ft (122 cm)
Wingspan (Block 1): 58 in (147 cm) — pop-out wings
Wingspan (Block 2): No wings; body strakes and 4 flip-out control fins
Wingspan (LE SR): No wings; triple pop-out grid fins at rear
Weight (Block 1/1B): 13 lb (5.9 kg)
Weight (Block 2): ~15 lb (est.)
Warhead (Block 1B): 4 lb (1.8 kg) blast-fragmentation, proximity-fused
Warhead (Block 2): Tungsten fragmentation warhead optimized for drone kills
Warhead (Block 3NK): Non-kinetic HPM (High-Power Microwave) payload — disables drone electronics without physical destruction
Payload (LE SR): Configurable: ISR sensor, EW, signal relay, or one-way munition
Launch Method: Pneumatic tube launcher; air-dropped from C-12, P-3, helicopters; vehicle-mounted (M-ATV, MRZR, Bradley IFV TOW launcher); ship-mounted container launchers (Arleigh Burke destroyers)
Airframe Material: Commercial off-the-shelf components; pop-out wing/fin mechanisms

PROPULSION & PERFORMANCE

Propulsion (Block 1): Electric motor, battery-powered pusher propeller
Max Speed (Block 1): 81 mph (130 km/h); cruise ~60 mph (97 km/h)
Endurance (Block 1): Up to 1–2 hours loiter

Propulsion (Block 2): Rocket-assisted launch + small turbojet sustainment engine
Max Speed (Block 2): 345–370 mph (555–595 km/h)
Endurance (Block 2): ~4 minutes airborne (high-speed intercept profile)
Engagement Range (Block 2): 10–15 km (6.2–9.3 mi)
Propulsion (Block 3NK): Rocket booster launch; electric motor pusher propeller
Performance (Block 3NK): Sufficient range, speed, altitude to engage Group 2/3 UAS [details classified]
Re-attack Capability: Block 2: Yes — re-engage on miss. Block 3NK: Yes — multiple engagements per sortie, then recovery
Launch Altitude: Air-droppable from up to 30,000 ft; ground-launched from tube

GUIDANCE, NAVIGATION & CONTROL

Sensor Cueing: KuRFS (Ku-band Radio Frequency Sensor) radar: detects Class I UAS to 16 km; can track objects as small as a 9mm bullet
Seeker (Block 1B): RF (radio frequency) seeker + proximity fuze
Seeker (Block 2): Small active radar seeker; Block 2+ variant has improved seeker
Guidance (Block 3NK): Classified — likely radar-cued with autonomous terminal guidance
Autonomy Level: Demonstrated autonomous swarming: 24+ Coyotes in formation (ONR LOCUST program, 2016). Autonomous target division and cooperative engagement without human operator. Configurable attack field for simultaneous multi-target engagement
Networking: Acts as FAAD C2 (Forward Area Air Defense Command & Control) network node. Coyote-to-Coyote communication for cooperative engagement
Control Link: Line-of-sight (enhanced range in later variants)
Man-in-Loop Required: Varies — can operate autonomously in swarming mode
Fiber-Optic Option: No

SENSORS & PAYLOADS

ISR (Block 1): EO/IR sensors for reconnaissance

NOAA Variant: Atmospheric sensors: pressure, temperature, moisture, wind speed/direction, sea surface temperature
LE SR Payloads: RSTA (Recon/Surveillance/Target Acquisition), EW (Electronic Warfare), signal relay, or one-way munition
Interchangeable: Yes — designed from inception for swappable payload modules

COST & PROCUREMENT

Unit Cost (Block 1): ~$15,000
Unit Cost (Block 2): ~$100,000–$125,000 per round (expendable)
Unit Cost (Block 3NK): Classified (reusable — amortized cost per engagement significantly lower)
Army FY2025–2029: 6,000 Block 2 + 700 Block 3NK; 252 fixed launchers; 52 mobile launchers; 118 fixed KuRFS radars; 33 mobile radars
Major Contracts: Jan 2024: $75M for 600 Coyote 2C. Sep 2025: $5B LIDS program (largest C-UAS contract in history). Feb 2026: Long-term framework agreements with Dept. of War
Export Sales: Qatar: 200 Block 2s in $1B FS-LIDS deal (Nov 2022). UAE: Local production partnership (Apr 2025). Multiple allied nations under FMS
Cost Comparison: Block 2 at ~$100K vs. SM-2 at ~$2M, SM-6 at ~$4.3M, ESSM at ~$1.5M, SM-3 at $12.5–$28.7M

PLATFORM INTEGRATION

Ground — Fixed: FS-LIDS: Palletized system with 4-round Coyote launcher + sensor array; separate pallet with KuRFS radar
Ground — Mobile: M-LIDS: M-ATV with 2-round Coyote launcher + 30mm XM914 cannon + EO sensors + mast-mounted KuRFS. Also deployable from pair of MRZR off-road vehicles
Ground — Armored: LE SR test-fired from M2 Bradley IFV TOW launcher (Mar 2025)
Airborne: Bell 407 helicopter with Modular Effects Launcher rack (Mar 2025). Air-dropped from C-12 Huron, NOAA P-3 Hurricane Hunters
Naval: Arleigh Burke-class destroyers (USS Bainbridge, USS Winston S. Churchill — container launchers, 2x6 tubes). Navy contract for Block 3 launch from USVs and UUVs

COUNTERMEASURE VULNERABILITY PROFILE

RF Jamming: MODERATE — Block 1 relies on LOS control link; Block 2 uses radar seeker susceptible to ECM. Autonomous swarming modes reduce dependence on continuous operator link. Block 3NK carries HPM, suggesting hardened electronics
GPS Spoofing: LOW–MODERATE — Short engagement ranges (10–15 km) and radar-seeker terminal guidance reduce GPS dependence
EMI/EMC Attack: LOW — Military-grade electronics; Block 3NK itself is an EMI weapon platform
Microwave Attack: LOW — Block 3NK carries a miniaturized HPM; the platform is almost certainly hardened against its own weapon's effects
Laser DEW: MODERATE — Small, fast target; Block 2 at 370 mph is difficult to track and dwell on
Kinetic Intercept: DIFFICULT — Small size (13–15 lb), high speed, low RCS make Coyote extremely hard to shoot down
Net / Physical Capture: LOW — High speed and small size defeat net-based systems
Cyber / Hack: LOW — Military-encrypted control links; autonomous modes reduce hack surface
Active Camouflage Defeat: N/A — Defensive interceptor, not a surveillance target
Overall Vulnerability Rating: LOW (as a C-UAS interceptor, designed to be difficult to counter)

COUNTERMEASURE NOTES

The Coyote is unusual in this volume because it is itself a countermeasure weapon, not a target. Its vulnerability profile is therefore inverted: the question is not "how do we stop this drone?" but "what drones can this system NOT stop?"
Block 3NK vs. Fiber-Optic Drones: The HPM payload attacks drone electronics directly via induced voltage spikes in internal wiring, regardless of communication method. Fiber-optic guided drones that defeat RF jamming remain vulnerable to Block 3NK, as the kill mechanism targets circuitry, not the comm link. This is the same principle demonstrated in the Tech Ingredients microwave weapon tests — internal wiring acts as antenna for induced EMI regardless of control method (see Volume 1, Section 20.1).
Cost Asymmetry: At $100K per Block 2 vs. $2–$4M for traditional SAMs, and Block 3NK reusable across multiple engagements, the Coyote directly addresses the cost-exchange problem exposed by Red

Sea/Houthi operations. The $5B LIDS contract reflects how seriously the U.S. military takes this approach.

Magazine Depth: Block 3NK's reusability directly addresses the "reaching into an empty box" problem. One Block 3NK can defeat multiple drones per sortie, recover, refurbish, and relaunch without leaving the battlefield.

CRUISE MISSILE CONVERGENCE NOTES

The Coyote family represents a fascinating inversion of the drone–cruise missile convergence thesis. Where most entries in this volume show consumer drones acquiring cruise missile capabilities (autonomous guidance, GPS/INS navigation, precision terminal attack), the Coyote shows a purpose-built military system evolving from simple ISR drone to autonomous interceptor to directed-energy weapons platform to multi-role launched effect.

Block 2 is functionally a small surface-to-air missile: rocket-boosted launch, jet sustainer, radar seeker, fragmentation warhead. It crossed from "drone" to "missile" by adopting legacy SAM design philosophy, miniaturized for the low-end threat.

Block 3NK represents a more radical evolution: a reusable airborne platform carrying a miniaturized directed-energy weapon. The HPM payload induces voltage spikes in target electronics — exactly the mechanism described in the Tech Ingredients microwave demonstrations. The difference is that instead of a fixed ground-based emitter, Raytheon put the emitter on a mobile platform that flies within meters of targets for maximum effect.

The LE SR variant completes the convergence cycle. Launched from a Bradley's TOW tube or a helicopter rack, configurable for ISR/EW/strike, recoverable or expendable — this is a tube-launched cruise missile in everything but name. The trajectory from expendable reconnaissance drone to multi-role launched effect in under two decades mirrors the broader convergence this book documents.

The autonomous swarming capability (LOCUST program) adds another dimension: 24+ Coyotes autonomously dividing targets and coordinating attacks. This is the defensive mirror image of the offensive drone swarm threat.

OPERATIONAL HISTORY

First flight 2007 (original ACR design, launched from C-12 Huron). NOAA operational since September 2014 for hurricane research (first deployment: Hurricane Edouard). Howler C-UAS achieved IOC June 2019 with U.S. Army after just 17 months of development. USMC GBAD C-UAS operational since 2018. Over 170 confirmed drone kills worldwide as of mid-2025 per U.S. Army. Block 2s deployed at forward locations in Middle East, Africa, and Europe; confirmed combat use in Syria including Al-Tanf Garrison. ONR LOCUST swarming demo in 2016: 24+ Coyotes in autonomous formation. Block 3NK defeated 10-drone swarm at Yuma Proving Grounds (Aug 2021). February 2026: Block 3NK defeated multiple drone swarms in U.S. Army exercise, demonstrating launch, intercept, recovery, and reuse in a single event. Coyote launchers installed on USS Bainbridge and other Arleigh Burke destroyers in Gerald R. Ford Carrier Strike Group (Jul–Aug 2025), driven by Red Sea/Houthi drone threat lessons. LE SR test-fired from Bradley IFV TOW launcher and Bell 407 helicopter (Mar 2025). $5 billion LIDS contract awarded September 2025. UAE local production partnership announced April 2025.

SOURCES & CROSS-REFERENCES

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DVIDS (M-LIDS system): https://www.dvidshub.net/news/557317/ — Fort Hood, Jan 2026 (U.S. Army, public domain)

DVIDS (Block 3 LE): https://www.dvidshub.net/image/8939727/ — Raytheon Coyote Block 3 Launched Effect variant (public domain)

DVIDS (LE Demo): https://www.dvidshub.net/feature/LESUD — Launched Effects Special User Demonstration (U.S. Army, public domain)

Key References: Wikipedia: Raytheon Coyote; designation-systems.net; The War Zone (twz.com); RTX press release 11 Feb 2026; Defense Post: $5B contract (Sep 2025)

Cross-Ref: Volume 1 Section 20.1 (Microwave Countermeasures); Switchblade 600 (A-021); Shahed-136 (A-016); MAGURA V5 (S-002); Anduril Roadrunner-M (competing C-UAS); Epirus Leonidas (ground-based HPM C-UAS)